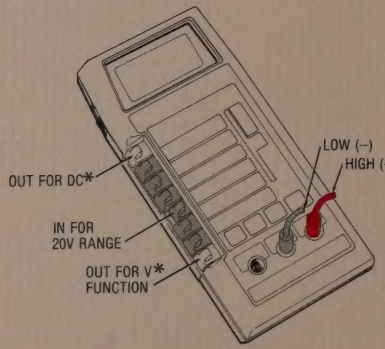
FLUKE D 802 Operator's Guide

Litho in U.S.A. J.F. P/N 606756 AUGUST 1980

WARNING

REMOVE INPUT SIGNAL AND TEST LEADS FROM D 802 INPUT TERMINALS BEFORE OPENING THE BATTERY COMPARTMENT OR OTHERWISE ACCESSING OR TOUCHING THE FUSE AND/OR BATTERY. DO NOT OPERATE THE INSTRUMENT UNLESS BATTERY COVER IS IN PLACE AND FULLY CLOSED.

DC VOLTAGE (DC V)

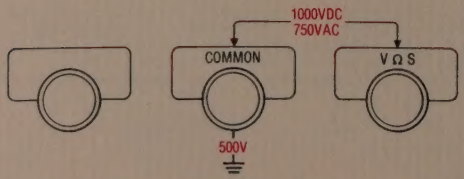


NOTE: The function switches are push-push type. Do not pull them to the out position.

- Connect the test leads as shown above.
- Depress the switch beside the desired range (20V is shown selected).
- Insure that all other switches are at the out position.

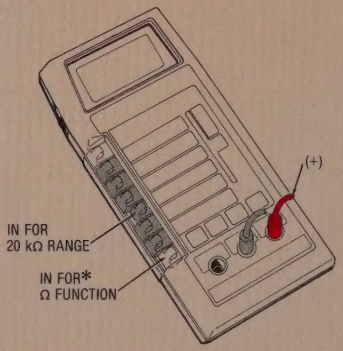
WARNING

TO AVOID ELECTRICAL SHOCK AND/OR INSTRUMENT DAMAGE, OBSERVE THE FOLLOWING MAXIMUM LIMITS WHEN MEASURING DC VOLTAGE:



- Connect the test probes to the circuit being measured.
- Read the measured value on the display. The minus sign will be automatically displayed if the signal input on the V-Ω-S terminal is negative with respect to the COMMON terminal. (See overrange discussion on RESISTANCE page.)

RESISTANCE (Ω)

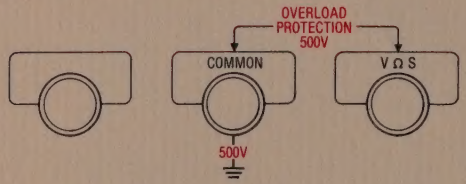


NOTE: The function switches are push-push type. Do not pull them to the out position.

- Connect the test leads as shown above.
- Depress the mA-V-Ω-S switch to select the Ω function.
- Depress the switch beside the range desired (20 kΩ is shown selected).
- Insure that all other switches are at the out position.
- Verify that the device or circuit being measured contains no electrical energy including charged capacitors.

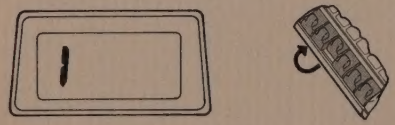
WARNING

TO AVOID ELECTRICAL SHOCK AND/OR INSTRUMENT DAMAGE, OBSERVE THE FOLLOWING MAXIMUM LIMITS WHEN MEASURING RESISTANCE:



- Connect the test probes across the device being measured.
- Read the measured value on the display. (See overrange discussion below.)

OVERRANGE DISPLAY

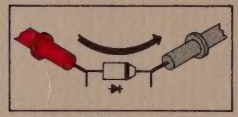


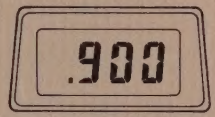
If the value of the parameter being measured exceeds the range selected, a "1", as shown above, is displayed as an overrange indicator. Select the next higher range until an in-range reading is displayed.

DIODE TEST (→|)

The 2 kΩ, 200 kΩ, and 20 MΩ ranges will turn on P-N junction diodes. Open circuit voltage is less than 3.5V on the 2 kΩ range and less than 1.5V on all other resistance ranges.

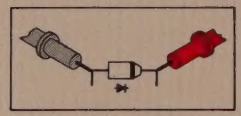
- Complete the set up steps for the RESISTANCE function and comply with the warning.
- Select the 2 kΩ range.
- Connect the test probes to the diode as shown below: red to anode, black to cathode. Normal forward operation of the diode is indicated by a display reading of less than 2 kΩ.

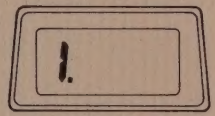




Typical reading for single junction silicon diode

- Reverse the test connections as shown below: red to cathode, black to anode. Normal reverse operation of the diode will be indicated by an overrange display provided the diode under test is disconnected from other parallel resistances of 2 kΩ or less.



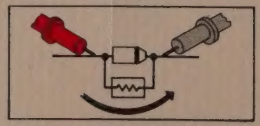


Overrange

IN-CIRCUIT RESISTANCE MEASUREMENTS

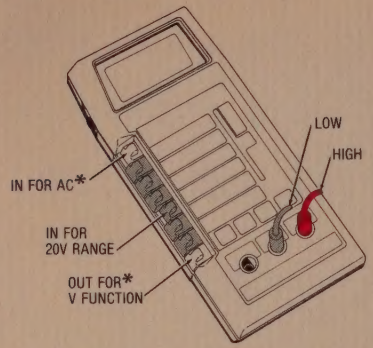
The 200Ω, 20 kΩ, 2000 kΩ ranges can be used to measure resistance values connected in parallel with silicon diodes. On these ranges the test voltage for an in-range reading is less than the voltage required to turn on a normal silicon diode.

- Complete the set up steps for the RESISTANCE function and comply with the warning.
- Select the 200Ω range.
- Connect the test probes to the circuit being measured.



- If the parallel resistance is less than 200Ω, the value will be shown in the display. Reversing the test probes will verify that the diode is not conducting.
- If an overrange indication is displayed, select to 20 kΩ or 2000 kΩ range.

AC VOLTAGE (AC V)

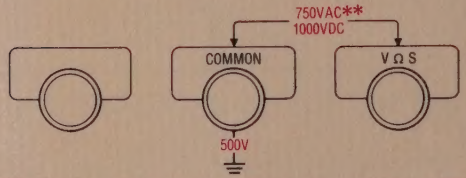


NOTE: The function switches are push-push type. Do not pull them to the out position

- Connect the test leads as shown above.
- Depress the AC/DC switch to select the AC function.
- Depress the switch beside the desired range (20V is shown selected).
- Insure that all other switches are at the out position.

WARNING

TO AVOID ELECTRICAL SHOCK AND/OR INSTRUMENT DAMAGE, OBSERVE THE FOLLOWING MAXIMUM LIMITS WHEN MEASURING AC VOLTAGE.



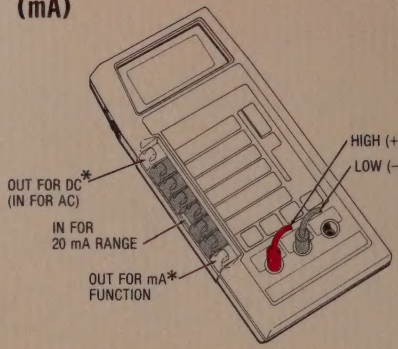
***Protection on 200 mV range allows 15 sec max for overload above 300V.*

- Connect the test probes to the circuit being measured.
- Read the measured value on the display. (See overrange discussion on RESISTANCE page.)

dBm TO VOLTAGE CONVERSION (600Ω)

dBm	V	dBm	V	dBm	mV	dBm	mV	dBm	mV
+5	1.377	−5	.436	−12	194.6	−22	61.5	−32	19.5
+4	1.228	−6	.388	−13	173.4	−23	54.8	−33	17.3
+3	1.094	−7	.346	−14	154.6	−24	48.9	−34	15.5
+2	.975	−8	.308	−15	137.7	−25	43.6	−35	13.8
+1	.869	−9	.275	−16	122.8	−26	38.8	−36	12.3
0	.775	−10	.245	−17	109.4	−27	34.6	−37	10.9
−1	.690	−11	.218	−18	97.5	−28	30.8	−38	9.8
−2	.615			−19	86.9	−29	27.5	−39	8.7
−3	.548			−20	77.5	−30	24.5	−40	7.7
−4	.489			−21	69.0	−31	21.8	−42	6.2

CURRENT (mA)

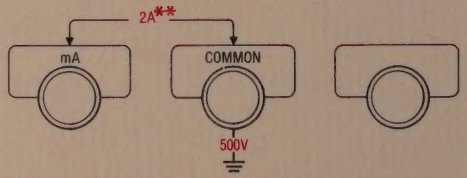


NOTE: The function switches are push-push type. Do not pull them to the out position.

- Connect the test leads as shown.
- Depress the switch beside the range desired (20 mA range is shown selected).
- Set the AC/DC switch out for DC or in for AC (DC shown selected).
- Insure that all other switches are at the out or OFF positions.

WARNING

TO AVOID ELECTRICAL SHOCK AND/OR INSTRUMENT DAMAGE, OBSERVE THE FOLLOWING MAXIMUM LIMITS WHEN MEASURING CURRENT.



***Protected by 2A/250V fuse and 3A/600V backup fuse.*

- Connect the test probes to the circuit being measured.
- Read the measured value on the display. In DC, the minus sign will appear if the mA terminal is negative with respect to the COMMON terminal. (See overrange discussion on RESISTANCE page.)
- If unit fails to read properly see fuse check below.

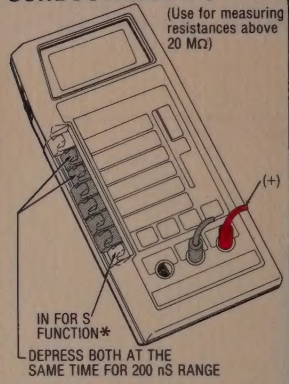
FUSE CHECK

The current (mA) function contains two fuses. Check them as follows:

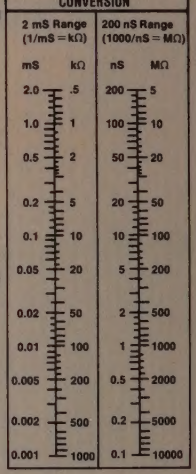
- Select the RESISTANCE (Ω) function and 2 kΩ range.
- Touch the red test probe to the mA input jack so that the V-Ω-S input and mA input are connected together.
- If the display reads approximately .100 kΩ, both fuses are good.
- If the display reads overrange, one or both fuses need replacement. See facing page for replacement instructions.

CONDUCTANCE (S)

(Use for measuring resistances above 20 MΩ)



CONDUCTANCE-TO-RESISTANCE CONVERSION

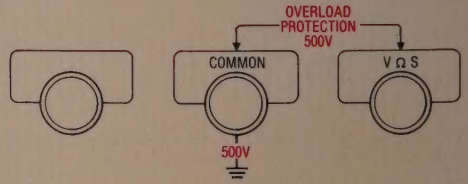


NOTE: The function switches are push-push type. Do not pull them to the out position.

- Connect the test leads as shown.
- Depress the mA-Ω-S function switch.
- AT THE SAME TIME, depress both of the range switches beside the desired range (The 200 nS range is shown selected.)
- Insure that all other switches are at the out or OFF positions.
- Insure that the device being measured contains no electrical energy including charged capacitors.

WARNING

TO AVOID ELECTRICAL SHOCK AND/OR INSTRUMENT DAMAGE, OBSERVE THE FOLLOWING MAXIMUM LIMITS WHEN MEASURING CONDUCTANCE:



- Connect the test probes across the device being measured (connect the red probe to the + end of polarized capacitors for leakage measurements).
- Conductance is displayed in Siemens which equals 1/Ω. Use the conversion scales above to determine the equivalent resistance.

BATTERY/FUSE TYPES

MAIN FUSE: 2A/250V Type AGX2 (inside battery compartment).

BACKUP FUSE: 3A/600V Type BBS-3 (inside instrument case).

Caution

Replacement of backup fuse by qualified personnel only. See service manual.

BATTERY: 9V carbon-zinc or alkaline NEDA Type #1604.

BT appears in display when approximately 20% of battery line remains.